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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,364	06/23/2003	Divya Chopra	DC8516 US NA	2771

23906 7590 10/10/2006

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WILMINGTON, DE 19805

EXAMINER

LEWIS, BEN

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/603,364	Applicant(s) CHOPRA ET AL.	
	Examiner Ben Lewis	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/23/03, 9/26/03, 7/29/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, Species 1, Claims 1-3 in Paper filed September 20th 2006 is acknowledged. After further consideration by the examiner, the restriction requirement is withdrawn. Claims 1-18 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun (U.S. Patent No. 6,451,471 B1) and further in view of Yamada et al. (U.S. Patent No. 6,500,893 B2).

With respect to claims 13-18 it is noted that claim 13-18 are product-by-process claims. "Even though product-by-process claims are limited by and defined by the process, determination of patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F. 2d 698,227 USPQ 964,966 (Fed Cir. 1985).

With respect to claim 1, Braun discloses a conductivity fuel cell collector plate and method of fabrication (title) wherein, the invention relates to conductive polymer composite structures and methods for their manufacture. More particularly, the invention relates to injection or compression molded conductive polymer compositions and techniques for their manufacture (Col 1 lines 15-25). Braun teaches that referring to FIG. 2, a cross-sectional view of an injection molded collector plate shows the molded surface layer and the portion of the land surfaces to be removed in accordance with the present invention. After molding, a polymer-rich surface layer 5 covers the land surfaces of the collector plate. After removal of the surface material, the land areas are reduced to a height 6. (In order to determine how much material was removed, a measurement of the startup thickness must have been made). Significantly, the channel walls 7 of the collector plate retain their polymer rich surface layers, while the newly formed land areas generally provide filler rich concentration similar to that of the bulk 8 of the collector plate. Simply stated, 0.001-0.5 cm, and ideally 0.015-0.06 cm, of the molded surface from the land areas of the plate is removed using machining, surface grinding, sanding or similar operation, in a manner that ensures a high level of flatness and parallelism in the finished plate. After the grinding operation, the land areas have the optimum height required for fuel cell operation. This height is typically between 0.05 and 0.15 cm, but may be less than 0.05 cm in certain designs. By removing the resin-rich layer from the projections on the plate, the resulting land surfaces contain a higher filler content than the surfaces of the original injection molded article, leading to higher

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electrical and thermal conductivity. The channel surfaces contain the polymer rich layer developed during the injection molding process, providing high mechanical strength, excellent barrier properties, erosion and chemical resistance, as well as hydrophobicity. (Col 4 lines 33-54).

Braun also disclose wherein the graphite is a powder and wherein the graphite is a fiber (See Braun, claims 13-16)

Braun does not specifically teach the percentage of plastic or graphite fiber or powder to form the current collector plate. However, Yamada et al. discloses a resin composition (title) wherein, the resin composition of the present invention contains, as another essential ingredient, at least one filler selected from the group consisting of graphite, ketjen black, acetylene black, furnace carbon black and thermal carbon black. By the use of such a carbon type electrically conductive filler, the composition has heightened corrosion resistance and moreover, side reactions can be prevented when it is used as a fuel cell separator or sealing material (Col 6 lines 25-34). The resin composition of the present invention generally contains the resin A), filler B) and fiber C) in an amount of from 10 to 70% by weight, from 40 to 90% by weight, and from 0 to 40% by weight, respectively, based on the total amount of the resin composition (Col 7 lines 60-67). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the composition of resin, filler and fiber of Yamada et al. in the fabrication of the separator plate of Braun because Yamada et al teach that when the amount of the filler is less than 40 parts by weight, the sufficient

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electrical conductivity cannot be attained, while the amounts exceeding 900 parts by weight cause a problem in strength or molding (Col 6 lines 64-67).

With respect to claims 2-18, the disclosure Braun differs from Applicant's claims in that Braun does not disclose wherein the thickness of the current collector plate is reduced by no more than the claimed amount. However, Braun recognized the need for removal of the polymer rich layer which would then decrease electrical resistance and increase desirable electrical conductivity. Braun teaches that by removing the resin-rich layer from the projections on the plate, the resulting land surfaces contain a higher filler content than the surfaces of the original injection molded article, leading to higher electrical and thermal conductivity (Col 4 lines 33-54).

Therefore, it would have been within the skill of the ordinary artisan to remove the polymer rich layer in an amount necessary to provide desirable electrical conductivity.

Discovery of optimum value of result effective variable in known process is ordinarily within skill of art. In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's Trainer, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ben Lewis

Patent Examiner

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SUSY TSANG-FOSTER
PRIMARY EXAMINER